EENS Job Risk Assessment

Name(s) of Risk Team Members: Taylor, John H; Ackerman, Andrew; Bernholc, Nicole M; Bou, Anna; Cabelli, Diane C; Carr, Patricia; DiNardo, Robert; Gill, Ronald L; Gmur, Nicholas; Peters, John; Piper, Arthur J; Preses, Jack M.; Sabatini, Robert; Stein, Steven H; Chmiel, Robert; Emrick, Ann; Weilandics, Christopher	**Point Value → Parameter ↓**	**1**	**2**	**3**	**4**	**5**
Job Title: Operation of a Laser in a laboratory **Job Number or Job Identifier:** EENS-JRA-006 **JRA Date**:	**Frequency (B)**	**≤once/year**	**≤once/month**	**≤once/week**	**≤once/shift**	**>once/shift**
Job Description: This JRA evaluates general operation of Lasers at BNL laboratories. It covers use with Class IIIB, and Class IV lasers.	**Severity (C)**	**First Aid Only**	**Medical Treatment**	**Lost Time**	**Partial Disability**	**Death or Permanent Disability**
Training and Procedure List (Optional): Applicable Standing Operating Procedures **Approved by:** **Date:** **Rev. #:** Draft	**Likelihood (D)**	**Extremely Unlikely**	**Unlikely**	**Possible**	**Probable**	**Multiple**
Stressors (if applicable, please list all): Distraction, Schedule	**Reason for Revision (if applicable):**				**Comments: PI qualifies & supervises users critical to component**	

				Before Additional Controls							**After Additional Controls**					
Job Step / Task	**Hazard**	**Control(s)**	**Stressors Y/N**	**# of People A**	**Frequency B**	**Severity C**	**Likelihood D**	**Risk* AxBxCxD**	**Control(s) Added to Reduce Risk**	**Stressors Y/N**	**# of People A**	**Frequency B**	**Severity C**	**Likelihood D**	**Risk* AxBxCxD**	**% Risk Reduction**
Installation of external optical elements	Incorrect Install	Laser SOP, Laser Specific Training Checklist, Laser User Qualification	N	1	2	2	2	8								
Alignment and adjustment of external optical elements using laser beam	Eye injury from laser exposure	Approved SOP, Laser power level, laser light frequency range, PPE, ESR, SMBS, room/laser	N	1	2	4	2	16								

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	Skin burn from laser exposure	Laser power level, laser light frequency range, PPE, room/laser interlocks, laser SOP, Laser Specific Training Checklist, Laser User Qualification, Tier 1 inspection, housekeeping, design of optical path, postings, SMBS, ESR	N	1	2	2	3	12								
Using Class IIIB laser in experiments	Eye injury	Approved SOP, SMBS, ESR, Laser power level, laser class, laser light frequency range, PPE, room/laser interlocks, laser SOP, Laser Specific Training Checklist, Laser User Qualification, Tier 1 inspection, housekeeping, design of optical path, postings, beam stop	N	1	4	4	1	16								
	Skin burn from laser exposure		N	1	4	2	1	8								
	Fire (focused beams)		N	1	4	2	1	8								
	Laser/Target Interaction		N	1	2	1	2	4								
	Interlock Failure		N	1	2	2	1	4								
Using Class IV laser in experiments	Eye injury	Laser power level, laser class, laser light frequency range, PPE, room/laser interlocks, approved SOP, ESR, Laser Specific Training Checklist, Laser User Qualification, Tier 1 inspection, housekeeping, design of optical path, postings, beam stop, SMBS	N	1	4	4	2	32		n	1	4	1	1	4	
	Skin Burns		N	1	4	2	2	16								
	Fire		N	1	4	2	2	16								
	Laser/Target Interaction		N	1	2	1	2	4								
	Interlock Failure		N	1	2	2	1	4								

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Job Step / Task	**Hazard**	**Control(s)**	**Stressors Y/N**	**# of People A**	**Frequency B**	**Severity C**	**Likelihood D**	**Risk* AxBxCxD**	**Control(s) Added to Reduce Risk**	**Stressors Y/N**	**# of People A**	**Frequency B**	**Severity C**	**Likelihood D**	**Risk* AxBxCxD**	**% Risk Reduction**
Maintenance, service and repair of Class IV laser	Eye injury	Laser power level, PPE, room/laser interlocks, approved SOP, work permit, training, work planning, PPE, interlock, housekeeping, LOTO, postings, NFPA 70E compliant, vendor qualified, user manual, beam stop	N	1	2	4	2	16		n	1	1	1	1	1	
	Skin burn		N	1	2	2	4	16								
	Fire due to laser igniting materials		N	1	2	1	2	4								
	Electrocution		N	2	2	5	2	40								
	Injury from chemical exposure (laser dye/carrier)		N	1	2	4	2	16								
Testing laser interlocks (Only if laser actually fires during testing. Does not apply if laser is enabled for testing, but does not run).	Eye injury	Laser power level, laser class, laser light frequency range, PPE, room/laser interlocks, approved SOP, work planning, Laser Specific Training Checklist, Laser User Qualification, Tier 1 inspection, housekeeping, design of optical path, postings, beam stop	N	1	2	4	1	8		n	1	1	1	1	1	
	Skin burn		N	1	2	2	1	4								

Further Description of Controls Added to Reduce Risk:

***Risk:**	**0 to 20 Negligible**	**21 to 40 Acceptable**	**41 to 60 Moderate**	**61 to 80 Substantial**	**81 or greater Intolerable**